

REMARKS

Claim Rejections under 35 U.S.C. §102:

Claims 1, 2, 5, 24-27, 34-35 stand rejected under 35 U.S.C. §102(b) as being anticipated by **Mitsubishi (JP 5-262910)**. The foam according to amended claim 1 of the present application differs from the foam according to **Mitsubishi** in the cell size of the foam. According to the abstract of **Mitsubishi** the disclosed foam has an average void diameter of  $\leq 10\text{ }\mu\text{m}$ . Amended claim 1 requires the foam to have a cell size of from 50 to 2000  $\mu\text{m}$ . The foams according to the amended claims of the present application are therefore novel over Mitsubishi.

A discussion of the nonobviousness of claim 1 and the claims depending therefrom over **Mitsubishi** is discussed below, because the rejections are being addressed in the order in which they appeared in the Office Action of July 17, 2006.

Claim Rejections under 35 U.S.C. §102/103:

Claims 28-33 and 36-41 stand rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over **Mitsubishi**.

All claims in this grouping now depend (in some way) from amended claim 1, and so, for the same reasons presented above, the claims as amended are not anticipated by Mitsubishi.

Regarding the alternative rejection under 35 U.S.C. §103(a), “to establish a *prima facie* case of obviousness ... the prior art reference ... must teach or suggest all the claim limitations.”<sup>1</sup> **Mitsubishi** teaches that the average void diameter must be less than or equal to 10  $\mu\text{m}$ , while amended claim 1 requires the foam to have a cell size of from 50 to 2000  $\mu\text{m}$ . “If an independent claim is nonobvious under 35 U.S.C. §103, then any claim depending therefrom is nonobvious.”<sup>2</sup> Thus, **Mitsubishi** does not teach all of the claim

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<sup>1</sup> MPEP 2143.

<sup>2</sup> MPEP §2143.03, citing *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

limitations, and the claims as amended are not *prima facie* obvious over Mitsubishi.

Additionally, “to establish a *prima facie* case of obviousness ... there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference.”<sup>3</sup>

**Mitsubishi** teaches that the average void diameter must be less than or equal to 10  $\mu\text{m}$ , while amended claim 1 requires the foam to have a cell size of from 50 to 2000  $\mu\text{m}$ . One of ordinary skill in the art would know that pore diameter is closely related to the sought filtration of **Mitsubishi**, and that a modification to larger pores would destroy the suitability of the foam for use as a filter membrane. It is well settled that “if a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.”<sup>4</sup> Thus, **Mitsubishi** fails to provide a suggestion or motivation to modify its disclosure to arrive at the present invention, and the claims as amended are not *prima facie* obvious over **Mitsubishi**.

Claims 1, 2, 5, 14, and 24-41 stand rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over **Knaus (US Patent 4,308,352)**.

**Knaus** discloses a process for producing a polysulfone foam, wherein methylene chloride is used as a blowing agent. According to column 5, lines 34 to 37, the polysulfone foam obtained by the process of **Knaus** possesses a highly uniform fine-cell structure consisting for the most part of thin-walled individually closed cells. The polysulfone foam prepared according to the method disclosed in **Knaus**, therefore, differs from the foam as claimed in amended claim 1 of the present application by the amount of open cells. Whereas the open-cell factor of the foam according to amended claim 1 of the present application is at least 75%, most cells of the foam according to **Knaus** are closed cells. Thus, the claims as amended are not anticipated by Knaus.

Regarding the alternative rejection under 35 U.S.C. §103(a), “to establish a *prima*

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<sup>3</sup> MPEP §2143

<sup>4</sup> *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

*facie* case of obviousness ... the prior art reference ... must teach or suggest all the claim limitations.”<sup>5</sup> **Knaus** discloses a foam with a predominately closed-cell structure, while the amended claims of the present application require the open-cell factor of the foam to be at least 75%. Thus, **Knaus fails to teach or suggest all the claim limitations, and the claims as amended are not *prima facie* obvious over Knaus**. Additionally, “to establish a *prima facie* case of obviousness ... there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference.”<sup>6</sup> According to **Knaus**, a method for the preparation of polysulfone foam is disclosed, wherein a specific blowing agent, methylene chloride, is used. The foam according to **Knaus** is useful for a variety of purposes, e.g., as insulation, microwave oven food trays, and sound speakers (column 5, lines 33, 34). One of ordinary skill in the art would have known that modifying the disclosure of **Knaus** from a predominately closed-cell structure to a predominately open-cell structure (for example, a cell structure with an open-cell factor of at least 75% as in the amended claims of the present application) would destroy the foam’s usefulness as insulation, microwave oven food trays, and sound speakers. It is well settled that “if a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification.”<sup>7</sup> Thus, **Knaus fails to provide a suggestion or motivation to modify its disclosure to arrive at the present invention, and the claims as amended are not *prima facie* obvious over Knaus**.

Claims 1, 2, 5, 14, and 24-41 stand rejected under 35 U.S.C. §102(b) as anticipated by or, in the alternative, under 35 U.S.C. §103(a) as obvious over **Nintz et al.** (US Patent 5,084,484).

**Nintz et al.** do not disclose any information concerning the open-cell factor of the foams obtained by the method according to **Nintz et al.** All that is disclosed is a process

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<sup>5</sup> MPEP 2143.

<sup>6</sup> Id.

<sup>7</sup> *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984).

for the preparation of a foam having high heat-distortion resistance, wherein aliphatic or aromatic dicarboxylic acids or polycarboxylic acids are used as precursors for blowing agents. Yet, the examiner boldly asserts that “from the processing conditions [disclosed in Nintz et al.] (such as very high processing temperatures, the amounts of specified blowing agents and the presence of specified amounts of nucleating agent) it is reasonable [*sic*] believed that the disclosed foams inherently exhibit the properties corresponding to the claimed characteristics.”<sup>8</sup> After making this bold assertion, the examiner asserts that “the burden is shifted to the applicants to provide factual evidence to the contrary.”<sup>9</sup> However, it is respectfully submitted that applicants’ original disclosure provide ample factual evidence to the contrary. The present application explains:

In order to bring about an open-cell structure in the foam obtainable by the process of the invention, the temperature of the melt during foaming is higher, by from 2 to 20 °C, preferably from 2 to 12 °C, particularly preferably from 2 to 10° C, than the temperature at which a closed-cell foam is formed.

According to the invention, it has been found that the open-cell factor increases with temperature within a narrow temperature range. However, if the temperature rises above a certain value, the foam then collapses. According to the invention, therefore, an open-cell foam is obtained only if the temperature lies within this very narrow temperature range of higher by from 2 to 20 °C, preferably from 2 to 12 °C, particularly preferably from 2 to 10 °C, than the temperature at which a closed-cell foam is formed.<sup>10</sup>

Thus, the present application provides evidence that foams of high temperature-resistant thermoplastics having an open-cell factor of at least 75% are only obtained under very specific conditions. As indicated above, the temperature of the reaction mixture in the preparation process of the foam is particularly relevant. If the temperature is too low, foams are obtained having an open-cell factor below 75%, and if the temperature rises

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<sup>8</sup> Page 4, lines 9-13, of the Office Action of July 17, 2006.

<sup>9</sup> Page 4, lines 13-14, of the Office Action of July 17, 2006.

<sup>10</sup> Page 7, indicated lines 12-23, of the Specification of the present application.

above a certain value, the foam collapses. In the specification of Nintz et al. no temperature range is given which gives a person skilled in the art information for obtaining a foam having a high open-cell factor.

Examples 1-7 of Nintz et al. disclose varying processes for producing the foams disclosed in Nintz et al. In the processes of Nintz et al., the mold is heated to different temperatures depending solely on the thermoplastic used. No consideration whatsoever is given to the impact of mold temperature on the open-cell factor. Since foams having an open-cell factor of at least 75% are only obtained within narrow temperature ranges of the mold, it is unreasonable to conclude that Nintz et al. disclose foams having an open-cell factor of at least 75%. Thus, the amended claims are not anticipated by Nintz et al.

Regarding the alternative rejection under 35 U.S.C. §103(a), “to establish a *prima facie* case of obviousness ... the prior art reference ... must teach or suggest all the claim limitations.”<sup>11</sup> Nintz et al. contains no reference whatsoever to the extremely important claim limitation that the foam must have an open-cell structure, wherein the open-cell factor for the foam is at least 75%. Thus, Nintz et al. fail to teach or suggest all the claim limitations, and the claims as amended are not *prima facie* obvious over Nintz et al.

Additionally, “to establish a *prima facie* case of obviousness ... there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference.”<sup>12</sup> Nintz et al. disclose foams based on aromatic polyether ketones or other thermoplastic polymers and a specific preparation process for obtaining said foams, wherein an aliphatic or aromatic dicarboxylic acid or polycarboxylic acid is used as precursor for a blowing agent. The foams obtained according to Nintz et al. are not specially prepared with a high open-cell factor so that they will be suitable for sound deadening, instead they are prepared without regard to their open-cell factor for use merely “as an insulation and building material in the interiors of motor vehicles, aircraft and space craft.”<sup>13</sup> Nintz et al. provides no suggestion or motivation to one of ordinary skill in the art to modify its

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<sup>11</sup> MPEP 2143.

<sup>12</sup> Id.

<sup>13</sup> Column 2, indicated lines 50 to 52, of Nintz et al.

Application No.: 10/784,815

Inventor: Scherzer

Docket No.: 54166

disclosure in order to obtain a foam having a high open-cell factor that would be more suitable for sound deadening than foams having a low open-cell factor, and thus the claims as amended are not prima facie obvious over Nintz et al.

Regarding the allegedly non-compliant Information Disclosure Statement:

Applicants respectfully request that the issue regarding the compliance of the Information Disclosure Statement under 37 C.F.R. §1.97(c) be held in abeyance until a decision has been issued on the petition to withdraw the finality of the previous office action.